

1

## SEQUENCE LISTING

&lt;110&gt; Montminy, Marc R.

&lt;120&gt; Methods for Treating Diabetes Mellitus

&lt;130&gt; SALK1650-1

&lt;140&gt; US 08/961,739

&lt;141&gt; 1997-10-31

&lt;150&gt; US 194,468

&lt;151&gt; 1994-02-10

&lt;160&gt; 4

&lt;170&gt; FastSEQ for Windows Version 4.0

&lt;210&gt; 1

&lt;211&gt; 7326

&lt;212&gt; DNA

&lt;213&gt; Mus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)...(7326)

&lt;221&gt; misc\_feature

&lt;222&gt; (1)...(7326)

&lt;223&gt; n = A,T,C or G

&lt;400&gt; 1

atg gcc gag aac ttg ctg gac gga cgg ccc aac ccc aaa cga gcc aaa	48
Met Ala Glu Asn Leu Leu Asp Gly Pro Pro Asn Pro Lys Arg Ala Lys	
1 5 10 15	
ctc agc tcg ccc ggc ttc tcc gcg aat gac aac aca gat ttt gga tca	96
Leu Ser Ser Pro Gly Phe Ser Ala Asn Asp Asn Thr Asp Phe Gly Ser	
20 25 30	
ttg ttt gac ttg gaa aat gac ctt cct gat gag ctg atc ccc aat gga	144
Leu Phe Asp Leu Glu Asn Asp Leu Pro Asp Glu Leu Ile Pro Asn Gly	
35 40 45	
gaa tta agc ctt tta aac agt ggg aac ctt gtt cca gat gct gcg tcc	192
Glu Leu Ser Leu Leu Asn Ser Gly Asn Leu Val Pro Asp Ala Ala Ser	
50 55 60	
aaa cat aaa caa ctg tca gag ctt ctt aga gga ggc agc ggc tct agc	240
Lys His Lys Gln Leu Ser Glu Leu Leu Arg Gly Gly Ser Gly Ser Ser	
65 70 75 80	
atc aac cca ggg ata ggc aat gtg agt gcc agc agc cct gtg caa cag	288
Ile Asn Pro Gly Ile Gly Asn Val Ser Ala Ser Ser Pro Val Gln Gln	
85 90 95	
ggc ctt ggt ggc cag gct cag ggg cag ccg aac agt aca aac atg gcc	336
Gly Leu Gly Gly Gln Ala Gln Gly Gln Pro Asn Ser Thr Asn Met Ala	

2

100	105	110	
agc tta ggt gcc atg ggc aag agc cct ctg aac caa gga gac tca tca			384
Ser Leu Gly Ala Met Gly Lys Ser Pro Leu Asn Gln Gly Asp Ser Ser			
115	120	125	
aca ccc aac ctg ccc aaa cag gca gcc agc acc tct ggg ccc act ccc			432
Thr Pro Asn Leu Pro Lys Gln Ala Ala Ser Thr Ser Gly Pro Thr Pro			
130	135	140	
cct gcc tcc caa gca ctg aat oca caa gca caa aag caa gta ggg ctg			480
Pro Ala Ser Gln Ala Leu Asn Pro Gln Ala Gln Lys Gln Val Gly Leu			
145	150	155	160
gtg acc agt agt cct gcc aca tca cag act gga cct ggg atc tgc atg			528
Val Thr Ser Ser Pro Ala Thr Ser Gln Thr Gly Pro Gly Ile Cys Met			
165	170	175	
aat gct aac ttc aac cag acc cac cca ggc ctt ctc aat agt aac tct			576
Asn Ala Asn Phe Asn Gln Thr His Pro Gly Leu Leu Asn Ser Asn Ser			
180	185	190	
ggc cat agc tta atg aat cag gct caa caa ggg caa gct caa gtc atg			624
Gly His Ser Leu Met Asn Gln Ala Gln Gln Gly Gln Ala Gln Val Met			
195	200	205	
aat gga tct ctt ggg gct gct gga aga gga agg gga gct gga atg ccc			672
Asn Gly Ser Leu Gly Ala Gln Gly Arg Gly Arg Gly Ala Gly Met Pro			
210	215	220	
tac cct gct cca gcc atg cag ggg gcc aca agc agt gtg ctg gcg gag			720
Tyr Pro Ala Pro Ala Met Gln Gly Ala Thr Ser Ser Val Leu Ala Glu			
225	230	235	240
acc ttg aca cag gtt tcc cca caa atg gct ggc cat gct gga cta aat			768
Thr Leu Thr Gln Val Ser Pro Gln Met Ala Gly His Ala Gly Leu Asn			
245	250	255	
aca gca cag gca gga ggc atg acc aag atg gga atg act ggt acc aca			816
Thr Ala Gln Ala Gly Gly Met Thr Lys Met Gly Met Thr Gly Thr Thr			
260	265	270	
agt cca ttt gga caa ccc ttt agt caa act gga ggg cag cag atg gga			864
Ser Pro Phe Gly Gln Pro Phe Ser Gln Thr Gly Gly Gln Gln Met Gly			
275	280	285	
gcc act gga gtg aac ccc cag tta gcc agc aaa cag agc atg gtc aat			912
Ala Thr Gly Val Asn Pro Gln Leu Ala Ser Lys Gln Ser Met Val Asn			
290	295	300	
agt tta cct gct ttt cct aca gat atc aag aat act tca gtc acc act			960
Ser Leu Pro Ala Phe Thr Asp Ile Lys Asn Thr Ser Val Thr Thr			
305	310	315	320
gtg cca aat atg tcc cag ttg caa aca tca gtg gga att gta ccc aca			1008
Val Pro Asn Met Ser Gln Leu Gln Thr Ser Val Gly Ile Val Pro Thr			
325	330	335	
caa gca att gca aca ggc ccc aca gca gac cct gaa aaa cgc aaa ctg			1056
Gln Ala Ile Ala Thr Gly Pro Thr Ala Asp Pro Glu Lys Arg Lys Leu			

3

340	345	350	
ata cag cag cag ctg gtt cta ctg ctt cat gcc cac aaa tgt cag aga Ile Gln Gln Gln Leu Val Leu Leu Leu His Ala His Lys Cys Gln Arg 355 360 365			1104
cga gag caa gca aat gga gag gtt cgn gcc tgt tct ctc cca cac tgt Arg Glu Gln Ala Asn Gly Glu Val Xaa Ala Cys Ser Leu Pro His Cys 370 375 380			1152
cga acc atg aaa aac gtt ttg aat cac atg aca cat tgt cag gct ccc Arg Thr Met Lys Asn Val Leu Asn His Met Thr His Cys Gln Ala Pro 385 390 395 400			1200
aaa gcc tgc caa gtt gcc cat tgt gca tct tca cga caa atc atc tct Lys Ala Cys Gln Val Ala His Cys Ala Ser Ser Arg Gln Ile Ile Ser 405 410 415			1248
cat tgg aag aac tgc aca cga cat gac tgt cct gtt tgc ctc cct ttg His Trp Lys Asn Cys Thr Arg His Asp Cys Pro Val Cys Leu Pro Leu 420 425 430			1296
aaa aat gcc agt gac aag cga aac caa caa acc atc ctg gga tct cca Lys Asn Ala Ser Asp Lys Arg Asn Gln Gln Thr Ile Leu Gly Ser Pro 435 440 445			1344
gct agt gga att caa aac aca att ggt tct gtt ggt gca ggg caa cag Ala Ser Gly Ile Gln Asn Thr Ile Gly Ser Val Gly Ala Gly Gln Gln 450 455 460			1392
aat gcc act tcc tta agt aac coa aat ccc ata gac ccc agt tcc atg Asn Ala Thr Ser Leu Ser Asn Pro Asn Pro Ile Asp Pro Ser Ser Met 465 470 475 480			1440
cag cgg gcc tat gct gct cta gga ctc ccc tac atg aac cag cct cag Gln Arg Ala Tyr Ala Ala Leu Gly Leu Pro Tyr Met Asn Gln Pro Gln 485 490 495			1488
acg cag ctg cag cct cag gtt cct ggc cag caa cca gca cag cct cca Thr Gln Leu Gln Pro Gln Val Pro Gly Gln Gln Pro Ala Gln Pro Pro 500 505 510			1536
gcc cac cag cag atg agg act ctc aat gcc cta gga aac aac ccc atg Ala His Gln Gln Met Arg Thr Leu Asn Ala Leu Gly Asn Asn Pro Met 515 520 525			1584
agt gtc cca gca gga gga ata aca aca gat caa cag cca cca aac ttg Ser Val Pro Ala Gly Gly Ile Thr Thr Asp Gln Gln Pro Pro Asn Leu 530 535 540			1632
att tca gaa tca gct ctt coa aot tcc ttg ggg gct acc aat cca ctg Ile Ser Glu Ser Ala Leu Pro Thr Ser Leu Gly Ala Thr Asn Pro Leu 545 550 555 560			1680
atg aat gat ggt tca aac tct ggt aac att gga agc ctc agc acg ata Met Asn Asp Gly Ser Asn Ser Gly Asn Ile Gly Ser Leu Ser Thr Ile 565 570 575			1728
cot aca gca gcg cct cct tcc agc aot ggt gtt cga aaa ggc tgg cat Pro Thr Ala Ala Pro Pro Ser Ser Thr Gly Val Arg Lys Gly Trp His			1776

4

580	585	590	
gaa cat gtg act cag gac cta cgg agt cat cta gtc cat aaa ctc gtt Glu His Val Thr Gln Asp Leu Arg Ser His Leu Val His Lys Leu Val 595 600 605			1824
caa gcc atc ttc cca act cca gac cct gca gct ctg aaa gat cgc cgc Gln Ala Ile Phe Pro Thr Pro Asp Pro Ala Ala Leu Lys Asp Arg Arg 610 615 620			1872
atg gag aac ctg gtt gcc tat gct aag aaa gtg gag gga gac atg tat Met Glu Asn Leu Val Ala Tyr Ala Lys Lys Val Glu Gly Asp Met Tyr 625 630 635 640			1920
gag tct gct aat agc agg gat gaa tac tat cat tta tta gca gag aaa Glu Ser Ala Asn Ser Arg Asp Glu Tyr Tyr His Leu Leu Ala Glu Lys 645 650 655			1968
atc tat aaa ata caa aaa gaa cta gaa gaa aag cgg agg aca cgt tta Ile Tyr Lys Ile Gln Lys Glu Leu Glu Glu Lys Arg Arg Thr Arg Leu 660 665 670			2016
cat aag caa ggc atc ctg ggt aac cag cca gct tta cca gct tct ggg His Lys Gln Gly Ile Leu Gly Asn Gln Pro Ala Leu Pro Ala Ser Gly 675 680 685			2064
gct cag ccc cct gtg att cca cca gcc cag tct gta aga cct cca aat Ala Gln Pro Pro Val Ile Pro Pro Ala Gln Ser Val Arg Pro Pro Asn 690 695 700			2112
ggg ccc ctg cct ttg cca gtg aat cgc atg cag gtt tct caa ggg atg Gly Pro Leu Pro Leu Pro Val Asn Arg Met Gln Val Ser Gln Gly Met 705 710 715 720			2160
aat tca ttt aac cca atg tcc ctg gga aac gtc cag ttg cca cag gca Asn Ser Phe Asn Pro Met Ser Leu Gly Asn Val Gln Leu Pro Gln Ala 725 730 735			2208
ccc atg gga cct cgt gca goo toc cct atg aac cac tct gtg cag atg Pro Met Gly Pro Arg Ala Ala Ser Pro Met Asn His Ser Val Gln Met 740 745 750			2256
aac agc atg gcc tca gtt ccg ggt atg gcc att tct cct tca cgg atg Asn Ser Met Ala Ser Val Pro Gly Met Ala Ile Ser Pro Ser Arg Met 755 760 765			2304
cct cag cct cca aat atg atg ggc act cat gcc aac aac att atg gcc Pro Gln Pro Pro Asn Met Met Gly Thr His Ala Asn Asn Ile Met Ala 770 775 780			2352
cag gca cct act cag aac cag ttt ctg cca cag aac cag ttt cca tca Gln Ala Pro Thr Gln Asn Gln Phe Leu Pro Gln Asn Gln Phe Pro Ser 785 790 795 800			2400
tcc agt ggg gca atg agt gtg aac agt gtg ggc atg ggg caa cca gca Ser Ser Gly Ala Met Ser Val Asn Ser Val Gly Met Gly Gln Pro Ala 805 810 815			2448
gcc cag goa ggt gtt tca cag ggt cag gaa cct gga gct gct ctc cct Ala Gln Ala Gly Val Ser Gln Gly Gln Glu Pro Gly Ala Ala Leu Pro 820 825 830 835			2496

5

820	825	830	
aac cct ctg aac atg ctg gca ccc cag gcc ago cag ctg cct tgc cca Asn Pro Leu Asn Met Leu Ala Pro Gln Ala Ser Gln Leu Pro Cys Pro 835 840 845			2544
cca gtg aca cag tca cca ttg cac ccg act cca cct cct gct tcc aca Pro Val Thr Gln Ser Pro Leu His Pro Thr Pro Pro Ala Ser Thr 850 855 860			2592
gct gct ggc atg ccc tct ctc caa cat cca acg gca cca gga atg acc Ala Ala Gly Met Pro Ser Leu Gln His Pro Thr Ala Pro Gly Met Thr 865 870 875 880			2640
cct cct cag cca gca gct ccc act cag cca tct act cct gtg tca tct Pro Pro Gln Pro Ala Ala Pro Thr Gln Pro Ser Thr Pro Val Ser Ser 885 890 895			2688
ggg cag act cct acc cca act cct ggc tca gtg ccc agc gct gcc caa Gly Gln Thr Pro Thr Pro Thr Pro Gly Ser Val Pro Ser Ala Ala Gln 900 905 910			2736
aca cag agt acc cct aca gtc cag gca gca gca cag gct cag gtg act Thr Gln Ser Thr Pro Thr Val Gln Ala Ala Ala Gln Ala Gln Val Thr 915 920 925			2784
cca cag cct cag acc cca gtg cag cca cca tct gtg gct act cct cag Pro Gln Pro Gln Thr Pro Val Gln Pro Pro Ser Val Ala Thr Pro Gln 930 935 940			2832
tca tca cag cag caa cca acg cct gtg cat act cag cca cct ggc aca Ser Ser Gln Gln Gln Pro Thr Pro Val His Thr Gln Pro Pro Gly Thr 945 950 955 960			2880
ccg ctt tct cag gca gca gcc agc att gat aat aga gtc cct act ccc Pro Leu Ser Gln Ala Ala Ala Ser Ile Asp Asn Arg Val Pro Thr Pro 965 970 975			2928
tcc act gtg acc agt gct gaa acc agt tcc cag cag cca gga ccc gat Ser Thr Val Thr Ser Ala Glu Thr Ser Ser Gln Gln Pro Gly Pro Asp 980 985 990			2976
gtg ccc atg ctg gaa atg aag aca gag gtg cag aca gat gat gct gag Val Pro Met Leu Glu Met Lys Thr Glu Val Gln Thr Asp Asp Ala Glu 995 1000 1005			3024
cct gaa cct act gaa tcc aag ggg gaa cct cgg tct gag atg atg gaa Pro Glu Pro Thr Glu Ser Lys Gly Glu Pro Arg Ser Glu Met Met Glu 1010 1015 1020			3072
gag gat tta caa ggt tct tcc caa gta aaa gaa gag aca gat acg aca Glu Asp Leu Gln Gly Ser Ser Gln Val Lys Glu Glu Thr Asp Thr Thr 1025 1030 1035 1040			3120
gag cag aag tca gag cca atg gaa gta gaa gaa aag aaa cct gaa gta Glu Gln Lys Ser Glu Pro Met Glu Val Glu Glu Lys Lys Pro Glu Val 1045 1050 1055			3168
aaa gtg gaa gct aaa gag gaa gaa gag aac agt tog aac gao aca gcc Lys Val Glu Ala Lys Glu Glu Glu Glu Asn Ser Ser Asn Asp Thr Ala 1060 1065 1070 1075 1080			3216

6

1060	1065	1070	
tca caa tca aca tct cct tcc cag cca cgc aaa aaa atc ttt aaa ccc Ser Gln Ser Thr Ser Pro Ser Gln Pro Arg Lys Lys Ile Phe Lys Pro 1075 1080 1085			3264
gag gag cta cgc cag gca ctt atg cca act cta gaa goa ctc tat cga Glu Glu Leu Arg Gln Ala Leu Met Pro Thr Leu Glu Ala Leu Tyr Arg 1090 1095 1100			3312
cag gac cca gag tct ttg cct ttt cgt cag cct gta gat cct cag ctc Gln Asp Pro Glu Ser Leu Pro Phe Arg Gln Pro Val Asp Pro Gln Leu 1105 1110 1115 1120			3360
cta gga atc cca gat tat ttt gat ata gtg aag aat oct atg gac ctt Leu Gly Ile Pro Asp Tyr Phe Asp Ile Val Lys Asn Pro Met Asp Leu 1125 1130 1135			3408
tct acc atc aaa cga aag ctg gac aca ggg caa tat caa gaa ccc tgg Ser Thr Ile Lys Arg Lys Leu Asp Thr Gly Gln Tyr Gln Glu Pro Trp 1140 1145 1150			3456
cag tat gtg gat gat gtc agg ctt atg ttc aac aat gcg tgg cta tat Gln Tyr Val Asp Asp Val Arg Leu Met Phe Asn Asn Ala Trp Leu Tyr 1155 1160 1165			3504
aat cgt aaa acg tcc cgt gta tat aaa ttt tgc agt aaa ctt gca gag Asn Arg Lys Thr Ser Arg Val Tyr Lys Phe Cys Ser Lys Leu Ala Glu 1170 1175 1180			3552
gtc ttt gaa caa gaa att gac cct gtc atg cag tct ctt gga tat tgc Val Phe Glu Gln Glu Ile Asp Pro Val Met Gln Ser Leu Gly Tyr Cys 1185 1190 1195 1200			3600
tgt gga cga aag tat gag ttc tcc cca cag act ttg tgc tgt tac gga Cys Gly Arg Lys Tyr Glu Phe Ser Pro Gln Thr Leu Cys Cys Tyr Gly 1205 1210 1215			3648
aag cag ctg tgt aca att cct cgt gat gca gcc tac tac agc tat cag Lys Gln Leu Cys Thr Ile Pro Arg Asp Ala Ala Tyr Tyr Ser Tyr Gln 1220 1225 1230			3696
aat agg tat cat ttc tgt ggg aag tgt ttc aca gag atc cag ggc gag Asn Arg Tyr His Phe Cys Gly Lys Cys Phe Thr Glu Ile Gln Gly Glu 1235 1240 1245			3744
aat gtg acc ctg ggt gac gac cct tcc caa cct cag acg aca att tcc Asn Val Thr Leu Gly Asp Asp Pro Ser Gln Pro Gln Thr Thr Ile Ser 1250 1255 1260			3792
aag gat caa ttt gaa aag aag aaa aat gat acc tta gat cct gaa cct Lys Asp Gln Phe Glu Lys Lys Lys Asn Asp Thr Leu Asp Pro Glu Pro 1265 1270 1275 1280			3840
ttt gtt gac tgc aaa gag tgt ggc cgg aag atg cat cag att tgt gtt Phe Val Asp Cys Lys Glu Cys Gly Arg Lys Met His Gln Ile Cys Val 1285 1290 1295			3888
cta cac tat gac atc att tgg cct tca ggt ttt gtg tgt gac aac tgt Leu His Tyr Asp Ile Ile Trp Pro Ser Gly Phe Val Cys Asp Asn Cys 1300 1305 1310 1315			3936

7

1300	1305	1310	
ttg aag aaa act ggc aga cct cgg aaa gaa aac aaa ttc agt gct aag Leu Lys Lys Thr Gly Arg Pro Arg Lys Glu Asn Lys Phe Ser Ala Lys 1315 1320 1325			3984
agg ctg cag acc aca cga ttg gga aac cac tta gaa gac aga gtg aat Arg Leu Gln Thr Thr Arg Leu Gly Asn His Leu Glu Asp Arg Val Asn 1330 1335 1340			4032
aag ttt ttg cgg cgc cag aat cac cct gaa gct ggg gag gtt ttt gtc Lys Phe Leu Arg Arg Gln Asn His Pro Glu Ala Gly Glu Val Phe Val 1345 1350 1355 1360			4080
aga gtg gtg gcc agc tca gac aag act gtg gag gtc aag cgg gga atg Arg Val Val Ala Ser Ser Asp Lys Thr Val Glu Val Lys Pro Gly Met 1365 1370 1375			4128
aag tca agg ttt gtg gat tct gga gag atg tgg gaa tct ttc cca tat Lys Ser Arg Phe Val Asp Ser Gly Glu Met Ser Glu Ser Phe Pro Tyr 1380 1385 1390			4176
cgt acc aaa gca ctc ttt gct ttt gag gag atc gat gga gtc gat gtg Arg Thr Lys Ala Leu Phe Ala Phe Glu Glu Ile Asp Gly Val Asp Val 1395 1400 1405			4224
tgc ttt ttt ggg atg cat gtg caa gat acg gct ctg att gcc ccc cac Cys Phe Phe Gly Met His Val Gln Asp Thr Ala Leu Ile Ala Pro His 1410 1415 1420			4272
caa ata caa ggc tgt gta tac ata tct tat ctg gac agt att cat ttc Gln Ile Gln Gly Cys Val Tyr Ile Ser Tyr Leu Asp Ser Ile His Phe 1425 1430 1435 1440			4320
ttc cgg ccc cgc tgc ctc cgg aca gct gtt tac cat gag atc ctc atc Phe Arg Pro Arg Cys Leu Arg Thr Ala Val Tyr His Glu Ile Leu Ile 1445 1450 1455			4368
gga tat ctc gag tat gtg aag aaa ttg gtg tat gtg aca gca cat att Gly Tyr Leu Glu Tyr Val Lys Lys Leu Val Tyr Val Thr Ala His Ile 1460 1465 1470			4416
tgg gcc tgt ccc cca agt gaa gga gat gac tat atc ttt cat tgc cac Trp Ala Cys Pro Pro Ser Glu Gly Asp Asp Tyr Ile Phe His Cys His 1475 1480 1485			4464
ccc cct gac cag aaa atc ccc aaa cca aaa cga cta cag gag tgg tac Pro Pro Asp Gln Lys Ile Pro Lys Pro Lys Arg Leu Gln Glu Trp Tyr 1490 1495 1500			4512
aag aag atg ctg gac aag gcg ttt gca gag agg atc att aac gac tat Lys Lys Met Leu Asp Lys Ala Phe Ala Glu Arg Ile Ile Asn Asp Tyr 1505 1510 1515 1520			4560
aag gac atc ttc aaa caa gcg aac gaa gac agg ctc acg agt gcc aag Lys Asp Ile Phe Lys Gln Ala Asn Glu Asp Arg Leu Thr Ser Ala Lys 1525 1530 1535			4608
gag ttg ccc tat ttt gaa gga gat ttc tgg cct aat gtg ttg gaa gaa Glu Leu Pro Tyr Phe Glu Gly Asp Phe Trp Pro Asn Val Leu Glu Glu 1540 1545 1550			4656

8

1540	1545	1550	
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agt act gca gcg agt gag act cct gag ggc agt cag ggt gac agc aaa Ser Thr Ala Ala Ser Glu Thr Pro Glu Gly Ser Gln Gly Asp Ser Lys 1570 1575 1580			4752
aat gcg aag aaa aag aac aac aag aag acc aac aaa aac aaa agc agc Asn Ala Lys Lys Lys Asn Asn Lys Lys Thr Asn Lys Asn Lys Ser Ser 1585 1590 1595 1600			4800
att agc cgc gcc aac aag aag aag ccc agc atg ccc aat gtt tcc aac Ile Ser Arg Ala Asn Lys Lys Lys Pro Ser Met Pro Asn Val Ser Asn 1605 1610 1615			4848
gac ctg tog cag aag ctg tat gcc acc atg gag aag cac aag gag gta Asp Leu Ser Gln Lys Leu Tyr Ala Thr Met Glu Lys His Lys Glu Val 1620 1625 1630			4896
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ccc atc gtg gac cct gat cct ctg ctt agc tgt gac ctc atg gat ggg Pro Ile Val Asp Pro Asp Pro Leu Leu Ser Cys Asp Leu Met Asp Gly 1650 1655 1660			4992
cga gat gcc ttc ctc acc ctg gcc aga gac aag cac tgg gaa ttc tct Arg Asp Ala Phe Leu Thr Leu Ala Arg Asp Lys His Trp Glu Phe Ser 1665 1670 1675 1680			5040
tcc tta cgc cgc tcc aaa tgg tcc act ctg tgc atg ctg gtg gag ctg Ser Leu Arg Arg Ser Lys Trp Ser Thr Leu Cys Met Leu Val Glu Leu 1685 1690 1695			5088
cac aca cag ggc cag gac cgc ttt gtt tat acc tgc aat gag tgc aaa His Thr Gln Gly Gln Asp Arg Phe Val Tyr Thr Cys Asn Glu Cys Lys 1700 1705 1710			5136
cac cat gtg gaa aca cgc tgg cac tgc act gtg tgt gag gac tat gac His His Val Glu Thr Arg Trp His Cys Thr Val Cys Glu Asp Tyr Asp 1715 1720 1725			5184
ctt tgt atc aat tgc tac aac aca aag agc cac acc cat aag atg gtg Leu Cys Ile Asn Cys Tyr Asn Thr Lys Ser His Thr His Lys Met Val 1730 1735 1740			5232
aag tgg ggg cta ggc cta gat gat gag ggc agc agt cag ggt gag cca Lys Trp Gly Leu Gly Leu Asp Asp Glu Gly Ser Ser Gln Gly Glu Pro 1745 1750 1755 1760			5280
cag tcc aag agc ccc cag gaa tcc cgg cgt ctc agc atc cag cgc tgc Gln Ser Lys Ser Pro Gln Glu Ser Arg Arg Leu Ser Ile Gln Arg Cys 1765 1770 1775			5328
atc cag tcc ctg gtg cat gcc tgc cag tgt cgc aat gcc aac tgc tca Ile Gln Ser Leu Val His Ala Cys Gln Cys Arg Asn Ala Asn Cys Ser 1780 1785 1790 1795			5376



9

1780	1785	1790	
ctg ccg tct tgc cag aag atg aag cga gtc gtg cag cac acc aag ggc Leu Pro Ser Cys Gln Lys Met Lys Arg Val Val Gln His Thr Lys Gly 1795 1800 1805			5424
tgc aag cgc aag act aat gga gga tgc cca gtg tgc aag cag ctc att Cys Lys Arg Lys Thr Asn Gly Gly Cys Pro Val Cys Lys Gln Leu Ile 1810 1815 1820			5472
gct ctt tgc tgc tac cac gcc aaa cac tgc caa gaa aat aaa tgc cct Ala Leu Cys Cys Tyr His Ala Lys His Cys Gln Glu Asn Lys Cys Pro 1825 1830 1835 1840			5520
gtg ccc ttc tgc ctc aac atc aaa cat aac gtc cgc cag cag cag atc Val Pro Phe Cys Leu Asn Ile Lys His Asn Val Arg Gln Gln Gln Ile 1845 1850 1855			5568
cag cac tgc ctg cag cag gct cag ctc atg cgc cgg cga atg gca acc Gln His Cys Leu Gln Gln Ala Gln Leu Met Arg Arg Arg Met Ala Thr 1860 1865 1870			5616
atg aac acc cgc aat gtg cct cag cag agt ttg cct tct cct acc tca Met Asn Thr Arg Asn Val Pro Gln Gln Ser Leu Pro Ser Pro Thr Ser 1875 1880 1885			5664
gca cca ccc ggg act cct aca cag cag ccc agc aca ccc caa aca cca Ala Pro Pro Gly Thr Pro Pro Gln Gln Pro Ser Thr Pro Gln Thr Pro 1890 1895 1900			5712
cag ccc cca gcc cag cct cag cct tca cct gtt aac atg tca cca gca Gln Pro Pro Ala Gln Pro Gln Pro Ser Pro Val Asn Met Ser Pro Ala 1905 1910 1915 1920			5760
ggc ttc cct aat gta gcc cgg act cag ccc cca aca ata gtg tct gct Gly Phe Pro Asn Val Ala Arg Thr Gln Pro Pro Thr Ile Val Ser Ala 1925 1930 1935			5808
ggg aag cct acc aac cag gtg cca gct ccc cca ccc cct gcc cag ccc Gly Lys Pro Thr Asn Gln Val Pro Ala Pro Pro Pro Pro Ala Gln Pro 1940 1945 1950			5856
cca cct gca gca gta gaa gca gcc cgg caa att gaa cgt gag gcc cag Pro Pro Ala Ala Val Glu Ala Ala Arg Gln Ile Glu Arg Glu Ala Gln 1955 1960 1965			5904
cag cag cag cac cta tac cga gca aac atc aac aat ggc atg ccc cca Gln Gln Gln His Leu Tyr Arg Ala Asn Ile Asn Asn Gly Met Pro Pro 1970 1975 1980			5952
gga cgt gac ggt atg ggg acc cca gga agc caa atg act cct gtg ggc Gly Arg Asp Gly Met Gly Thr Pro Gly Ser Gln Met Thr Pro Val Gly 1985 1990 1995 2000			6000
ctg aat gtg ccc cgt ccc aac caa gtc agt ggg cct gtc atg tct agt Leu Asn Val Pro Arg Pro Asn Gln Val Ser Gly Pro Val Met Ser Ser 2005 2010 2015			6048
atg cca cct ggg cag tgg cag cag gca ccc atc cct cag cag cag cgg Met Pro Pro Gly Gln Trp Gln Gln Ala Pro Ile Pro Gln Gln Gln Pro 2020 2025 2030 2035 2040 2045			6096

10

2020	2025	2030	
atg cca ggc atg ccc agg cct gta atg tcc atg cag gcc cag gca gca Met Pro Gly Met Pro Arg Pro Val Met Ser Met Gln Ala Gln Ala Ala 2035 2040 2045			6144
gtg gct ggg cca cgg atg ccc aat gtg cag cca aac agg agc atc tcg Val Ala Gly Pro Arg Met Pro Asn Val Gln Pro Asn Arg Ser Ile Ser 2050 2055 2060			6192
cca agt gcc ctg caa gac ctg cta cgg acc cta aag tca ccc agc tot Pro Ser Ala Leu Gln Asp Leu Leu Arg Thr Leu Lys Ser Pro Ser Ser 2065 2070 2075 2080			6240
cct cag cag cag cag cag gtg ctg aac atc ctt aaa tca aac cca cag Pro Gln Gln Gln Gln Gln Val Leu Asn Ile Leu Lys Ser Asn Pro Gln 2085 2090 2095			6288
cta atg gca gct ttc atc aaa cag cgc aca gcc aag tat gtg gcc aat Leu Met Ala Ala Phe Ile Lys Gln Arg Thr Ala Lys Tyr Val Ala Asn 2100 2105 2110			6336
cag cct ggc atg cag ccc cag ccc gga ctt caa tcc cag cct ggt atg Gln Pro Gly Met Gln Pro Gln Pro Gly Leu Gln Ser Gln Pro Gly Met 2115 2120 2125			6384
cag ccc cag cct ggc atg cac cag cag cct agt ttg caa aac ctg aac Gln Pro Gln Pro Gly Met His Gln Gln Pro Ser Leu Gln Asn Leu Asn 2130 2135 2140			6432
gca atg caa gct ggt gtg cca cgg cct ggt gtg cct cca cca caa cca Ala Met Gln Ala Gly Val Pro Arg Pro Gly Val Pro Pro Pro Gln Pro 2145 2150 2155 2160			6480
gca atg gga ggc ctg aat ccc cag gga caa gct ctg aac atc atg aac Ala Met Gly Gly Leu Asn Pro Gln Gly Gln Ala Leu Asn Ile Met Asn 2165 2170 2175			6528
cca gga cac aac ccc aac atg aca aac atg aat cca cag tac oga gaa Pro Gly His Asn Pro Asn Met Thr Asn Met Asn Pro Gln Tyr Arg Glu 2180 2185 2190			6576
atg gtg agg aga cag ctg cta cag cac cag cag cag cag cag caa cag Met Val Arg Arg Gln Leu Leu Gln His Gln Gln Gln Gln Gln Gln Gln 2195 2200 2205			6624
cag cag cag cag cag caa caa caa aat agt gcc agc ttg gcc ggg ggc Gln Gln Gln Gln Gln Gln Gln Asn Ser Ala Ser Leu Ala Gly Gly 2210 2215 2220			6672
atg gcg gga cac agc cag ttc cag cag cca caa gga cct gga ggt tat Met Ala Gly His Ser Gln Phe Gln Gln Pro Gln Gly Pro Gly Gly Tyr 2225 2230 2235 2240			6720
gcc cca gcc atg cag cag caa cgc atg caa cag cac ctc ccc atc cag Ala Pro Ala Met Gln Gln Gln Arg Met Gln Gln His Leu Pro Ile Gln 2245 2250 2255			6768
ggc agc tcc atg ggc cag atg gct gct cca atg gga caa ott ggc cag Gly Ser Ser Met Gly Gln Met Ala Ala Pro Met Gly Gln Leu Gly Gln 2260 2265 2270 2275			6816

11

2260	2265	2270	
atg ggg cag cct ggg cta ggg gca gac agc acc cct aat atc cag cag			6864
Met Gly Gln Pro Gly Leu Gly Ala Asp Ser Thr Pro Asn Ile Gln Gln			
2275	2280	2285	
gcc ctg cag caa cgg att ctg cag cag cag cag atg aag caa caa att			6912
Ala Leu Gln Gln Arg Ile Leu Gln Gln Gln Gln Met Lys Gln Gln Ile			
2290	2295	2300	
ggg tca cca ggc cag ccg aac ccc atg agc ccc cag cag cac atg ctc			6960
Gly Ser Pro Gly Gln Pro Asn Pro Met Ser Pro Gln Gln His Met Leu			
2305	2310	2315	2320
tca gga cag cca cag gcc tca cat ctc cct ggc cag cag atc gcc aca			7008
Ser Gly Gln Pro Gln Ala Ser His Leu Pro Gly Gln Gln Ile Ala Thr			
2325	2330	2335	
tcc ctt agt aac cag gtg cga tct cca gcc cct gtg cag tct cca cgg			7056
Ser Leu Ser Asn Gln Val Arg Ser Pro Ala Pro Val Gln Ser Pro Arg			
2340	2345	2350	
ccc caa tcc caa cct cca cat tcc agc ccg tca cca cgg ata caa ccc			7104
Pro Gln Ser Gln Pro Pro His Ser Ser Pro Ser Pro Arg Ile Gln Pro			
2355	2360	2365	
cag cct tca cca cac cat gtt tca ccc cag act gga acc cct cac cct			7152
Gln Pro Ser Pro His His Val Ser Pro Gln Thr Gly Thr Pro His Pro			
2370	2375	2380	
gga ctc gca gtc acc atg gcc agc tcc atg gat cag gga cac ctg ggg			7200
Gly Leu Ala Val Thr Met Ala Ser Ser Met Asp Gln Gly His Leu Gly			
2385	2390	2395	2400
aac cct gaa cag agt gca atg ctc ccc cag ctg aat acc ccc aac agg			7248
Asn Pro Glu Gln Ser Ala Met Leu Pro Gln Leu Asn Thr Pro Asn Arg			
2405	2410	2415	
agc gca ctg tcc agt gaa ctg tcc ctg gtt ggt gat acc acg gga gac			7296
Ser Ala Leu Ser Ser Glu Leu Ser Leu Val Gly Asp Thr Thr Gly Asp			
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aca cta gaa aag ttt gtg gag ggt ttg tag			7326
Thr Leu Glu Lys Phe Val Glu Gly Leu *			
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12

Leu	Ser	Ser	Pro	Gly	Phe	Ser	Ala	Asn	Asp	Asn	Thr	Asp	Phe	Gly	Ser	20	25	30
Leu	Phe	Asp	Leu	Glu	Asn	Asp	Leu	Pro	Asp	Glu	Leu	Ile	Pro	Asn	Gly	35	40	45
Glu	Leu	Ser	Leu	Leu	Asn	Ser	Gly	Asn	Leu	Val	Pro	Asp	Ala	Ala	Ser	50	55	60
Lys	His	Lys	Gln	Leu	Ser	Glu	Leu	Leu	Arg	Gly	Gly	Ser	Gly	Ser	Ser	65	70	75
Ile	Asn	Pro	Gly	Ile	Gly	Asn	Val	Ser	Ala	Ser	Ser	Pro	Val	Gln	Gln	85	90	95
Gly	Leu	Gly	Gly	Gln	Ala	Gln	Gly	Gln	Pro	Asn	Ser	Thr	Asn	Met	Ala	100	105	110
Ser	Leu	Gly	Ala	Met	Gly	Lys	Ser	Pro	Leu	Asn	Gln	Gly	Asp	Ser	Ser	115	120	125
Thr	Pro	Asn	Leu	Pro	Lys	Gln	Ala	Ala	Ser	Thr	Ser	Gly	Pro	Thr	Pro	130	135	140
Pro	Ala	Ser	Gln	Ala	Leu	Asn	Pro	Gln	Ala	Gln	Lys	Gln	Val	Gly	Leu	145	150	155
Val	Thr	Ser	Ser	Pro	Ala	Thr	Ser	Gln	Thr	Gly	Pro	Gly	Ile	Cys	Met	165	170	175
Asn	Ala	Asn	Phe	Asn	Gln	Thr	His	Pro	Gly	Leu	Leu	Asn	Ser	Asn	Ser	180	185	190
Gly	His	Ser	Leu	Met	Asn	Gln	Ala	Gln	Gln	Gly	Gln	Ala	Gln	Val	Met	195	200	205
Asn	Gly	Ser	Leu	Gly	Ala	Ala	Gly	Arg	Gly	Arg	Gly	Ala	Gly	Met	Pro	210	215	220
Tyr	Pro	Ala	Pro	Ala	Met	Gln	Gly	Ala	Thr	Ser	Ser	Val	Leu	Ala	Glu	225	230	235
Thr	Leu	Thr	Gln	Val	Ser	Pro	Gln	Met	Ala	Gly	His	Ala	Gly	Leu	Asn	245	250	255
Thr	Ala	Gln	Ala	Gly	Gly	Met	Thr	Lys	Met	Gly	Met	Thr	Gly	Thr	Thr	260	265	270
Ser	Pro	Phe	Gly	Gln	Pro	Phe	Ser	Gln	Thr	Gly	Gly	Gln	Gln	Met	Gly	275	280	285
Ala	Thr	Gly	Val	Asn	Pro	Gln	Leu	Ala	Ser	Lys	Gln	Ser	Met	Val	Asn	290	295	300
Ser	Leu	Pro	Ala	Phe	Pro	Thr	Asp	Ile	Lys	Asn	Thr	Ser	Val	Thr	Thr	305	310	315
Val	Pro	Asn	Met	Ser	Gln	Leu	Gln	Thr	Ser	Val	Gly	Ile	Val	Pro	Thr	325	330	335
Gln	Ala	Ile	Ala	Thr	Gly	Pro	Thr	Ala	Asp	Pro	Glu	Lys	Arg	Lys	Leu	340	345	350
Ile	Gln	Gln	Gln	Leu	Val	Leu	Leu	His	Ala	His	Lys	Cys	Gln	Arg		355	360	365
Arg	Glu	Gln	Ala	Asn	Gly	Glu	Val	Kaa	Ala	Cys	Ser	Leu	Pro	His	Cys	370	375	380
Arg	Thr	Met	Lys	Asn	Val	Leu	Asn	His	Met	Thr	His	Cys	Gln	Ala	Pro	385	390	395
Lys	Ala	Cys	Gln	Val	Ala	His	Cys	Ala	Ser	Ser	Arg	Gln	Ile	Ile	Ser	405	410	415
His	Trp	Lys	Asn	Cys	Thr	Arg	His	Asp	Cys	Pro	Val	Cys	Leu	Pro	Leu	420	425	430
Lys	Asn	Ala	Ser	Asp	Lys	Arg	Asn	Gln	Gln	Thr	Ile	Leu	Gly	Ser	Pro	435	440	445
Ala	Ser	Gly	Ile	Gln	Asn	Thr	Ile	Gly	Ser	Val	Gly	Ala	Gly	Gln	Gln	450	455	460
Asn	Ala	Thr	Ser	Leu	Ser	Asn	Pro	Asn	Pro	Ile	Asp	Pro	Ser	Ser	Met	465	470	475
Gln	Arg	Ala	Tyr	Ala	Ala	Leu	Gly	Leu	Pro	Tyr	Met	Asn	Gln	Pro	Gln	485	490	495

13

Thr	Gln	Leu	Gln	Pro	Gln	Val	Pro	Gly	Gln	Gln	Pro	Ala	Gln	Pro	Pro
		500						505					510		
Ala	His	Gln	Gln	Met	Arg	Thr	Leu	Asn	Ala	Leu	Gly	Asn	Asn	Pro	Met
		515					520					525			
Ser	Val	Pro	Ala	Gly	Gly	Ile	Thr	Thr	Asp	Gln	Gln	Pro	Pro	Asn	Leu
		530				535					540				
Ile	Ser	Glu	Ser	Ala	Leu	Pro	Thr	Ser	Leu	Gly	Ala	Thr	Asn	Pro	Leu
		545			550					555					560
Met	Asn	Asp	Gly	Ser	Asn	Ser	Gly	Asn	Ile	Gly	Ser	Leu	Ser	Thr	Ile
			565					570						575	
Pro	Thr	Ala	Ala	Pro	Pro	Ser	Ser	Thr	Gly	Val	Arg	Lys	Gly	Trp	His
		580						585					590		
Glu	His	Val	Thr	Gln	Asp	Leu	Arg	Ser	His	Leu	Val	His	Lys	Leu	Val
		595					600					605			
Gln	Ala	Ile	Phe	Pro	Thr	Pro	Asp	Pro	Ala	Ala	Leu	Lys	Asp	Arg	Arg
		610				615					620				
Met	Glu	Asn	Leu	Val	Ala	Tyr	Ala	Lys	Lys	Val	Glu	Gly	Asp	Met	Tyr
		625			630					635					640
Glu	Ser	Ala	Asn	Ser	Arg	Asp	Glu	Tyr	Tyr	His	Leu	Leu	Ala	Glu	Lys
			645					650						655	
Ile	Tyr	Lys	Ile	Gln	Lys	Glu	Leu	Glu	Glu	Lys	Arg	Arg	Thr	Arg	Leu
		660						665					670		
His	Lys	Gln	Gly	Ile	Leu	Gly	Asn	Gln	Pro	Ala	Leu	Pro	Ala	Ser	Gly
		675					680					685			
Ala	Gln	Pro	Pro	Val	Ile	Pro	Pro	Ala	Gln	Ser	Val	Arg	Pro	Pro	Asn
		690				695					700				
Gly	Pro	Leu	Pro	Leu	Pro	Val	Asn	Arg	Met	Gln	Val	Ser	Gln	Gly	Met
		705			710					715					720
Asn	Ser	Phe	Asn	Pro	Met	Ser	Leu	Gly	Asn	Val	Gln	Leu	Pro	Gln	Ala
			725					730						735	
Pro	Met	Gly	Pro	Arg	Ala	Ala	Ser	Pro	Met	Asn	His	Ser	Val	Gln	Met
		740						745					750		
Asn	Ser	Met	Ala	Ser	Val	Pro	Gly	Met	Ala	Ile	Ser	Pro	Ser	Arg	Met
		755					760					765			
Pro	Gln	Pro	Pro	Asn	Met	Met	Gly	Thr	His	Ala	Asn	Asn	Ile	Met	Ala
		770				775					780				
Gln	Ala	Pro	Thr	Gln	Asn	Gln	Phe	Leu	Pro	Gln	Asn	Gln	Phe	Pro	Ser
		785			790					795					800
Ser	Ser	Gly	Ala	Met	Ser	Val	Asn	Ser	Val	Gly	Met	Gly	Gln	Pro	Ala
			805					810						815	
Ala	Gln	Ala	Gly	Val	Ser	Gln	Gly	Gln	Glu	Pro	Gly	Ala	Ala	Leu	Pro
		820						825					830		
Asn	Pro	Leu	Asn	Met	Leu	Ala	Pro	Gln	Ala	Ser	Gln	Leu	Pro	Cys	Pro
		835				840						845			
Pro	Val	Thr	Gln	Ser	Pro	Leu	His	Pro	Thr	Pro	Pro	Pro	Ala	Ser	Thr
		850				855					860				
Ala	Ala	Gly	Met	Pro	Ser	Leu	Gln	His	Pro	Thr	Ala	Pro	Gly	Met	Thr
		865			870					875					880
Pro	Pro	Gln	Pro	Ala	Ala	Pro	Thr	Gln	Pro	Ser	Thr	Pro	Val	Ser	Ser
			885					890						895	
Gly	Gln	Thr	Pro	Thr	Pro	Thr	Pro	Gly	Ser	Val	Pro	Ser	Ala	Ala	Gln
		900						905					910		
Thr	Gln	Ser	Thr	Pro	Thr	Val	Gln	Ala	Ala	Ala	Gln	Ala	Gln	Val	Thr
		915					920					925			
Pro	Gln	Pro	Gln	Thr	Pro	Val	Gln	Pro	Pro	Ser	Val	Ala	Thr	Pro	Gln
		930				935					940				
Ser	Ser	Gln	Gln	Gln	Pro	Thr	Pro	Val	His	Thr	Gln	Pro	Pro	Gly	Thr
		945			950					955					960
Pro	Leu	Ser	Gln	Ala	Ala	Ala	Ser	Ile	Asp	Asn	Arg	Val	Pro	Thr	Pro
			965						970					975	

14  
Ser Thr Val Thr Ser Ala Glu Thr Ser Ser Gln Gln Pro Gly Pro Asp  
980 985 990  
Val Pro Met Leu Glu Met Lys Thr Glu Val Gln Thr Asp Asp Ala Glu  
995 1000 1005  
Pro Glu Pro Thr Glu Ser Lys Gly Glu Pro Arg Ser Glu Met Met Glu  
1010 1015 1020  
Glu Asp Leu Gln Gly Ser Ser Gln Val Lys Glu Glu Thr Asp Thr Thr  
1025 1030 1035 1040  
Glu Gln Lys Ser Glu Pro Met Glu Val Glu Glu Lys Lys Pro Glu Val  
1045 1050 1055  
Lys Val Glu Ala Lys Glu Glu Glu Glu Asn Ser Ser Asn Asp Thr Ala  
1060 1065 1070  
Ser Gln Ser Thr Ser Pro Ser Gln Pro Arg Lys Lys Ile Phe Lys Pro,  
1075 1080 1085  
Glu Glu Leu Arg Gln Ala Leu Met Pro Thr Leu Glu Ala Leu Tyr Arg  
1090 1095 1100  
Gln Asp Pro Glu Ser Leu Pro Phe Arg Gln Pro Val Asp Pro Gln Leu  
1105 1110 1115 1120  
Leu Gly Ile Pro Asp Tyr Phe Asp Ile Val Lys Asn Pro Met Asp Leu  
1125 1130 1135  
Ser Thr Ile Lys Arg Lys Leu Asp Thr Gly Gln Tyr Gln Glu Pro Trp  
1140 1145 1150  
Gln Tyr Val Asp Asp Val Arg Leu Met Phe Asn Asn Ala Trp Leu Tyr  
1155 1160 1165  
Asn Arg Lys Thr Ser Arg Val Tyr Lys Phe Cys Ser Lys Leu Ala Glu  
1170 1175 1180  
Val Phe Glu Gln Glu Ile Asp Pro Val Met Gln Ser Leu Gly Tyr Cys  
1185 1190 1195 1200  
Cys Gly Arg Lys Tyr Glu Phe Ser Pro Gln Thr Leu Cys Cys Tyr Gly  
1205 1210 1215  
Lys Gln Leu Cys Thr Ile Pro Arg Asp Ala Ala Tyr Tyr Ser Tyr Gln  
1220 1225 1230  
Asn Arg Tyr His Phe Cys Gly Lys Cys Phe Thr Glu Ile Gln Gly Glu  
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Lys Asp Gln Phe Glu Lys Lys Lys Asn Asp Thr Leu Asp Pro Glu Pro  
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Phe Val Asp Cys Lys Glu Cys Gly Arg Lys Met His Gln Ile Cys Val  
1285 1290 1295  
Leu His Tyr Asp Ile Ile Trp Pro Ser Gly Phe Val Cys Asp Asn Cys  
1300 1305 1310  
Leu Lys Lys Thr Gly Arg Pro Arg Lys Glu Asn Lys Phe Ser Ala Lys  
1315 1320 1325  
Arg Leu Gln Thr Thr Arg Leu Gly Asn His Leu Glu Asp Arg Val Asn  
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Lys Phe Leu Arg Arg Gln Asn His Pro Glu Ala Gly Glu Val Phe Val  
1345 1350 1355 1360  
Arg Val Val Ala Ser Ser Asp Lys Thr Val Glu Val Lys Pro Gly Met  
1365 1370 1375  
Lys Ser Arg Phe Val Asp Ser Gly Glu Met Ser Glu Ser Phe Pro Tyr  
1380 1385 1390  
Arg Thr Lys Ala Leu Phe Ala Phe Glu Glu Ile Asp Gly Val Asp Val  
1395 1400 1405  
Cys Phe Phe Gly Met His Val Gln Asp Thr Ala Leu Ile Ala Pro His  
1410 1415 1420  
Gln Ile Gln Gly Cys Val Tyr Ile Ser Tyr Leu Asp Ser Ile His Phe  
1425 1430 1435 1440  
Phe Arg Pro Arg Cys Leu Arg Thr Ala Val Tyr His Glu Ile Leu Ile  
1445 1450 1455

15  
Gly Tyr Leu Glu Tyr Val Lys Lys Leu Val Tyr Val Thr Ala His Ile  
1460 1465 1470  
Trp Ala Cys Pro Pro Ser Glu Gly Asp Asp Tyr Ile Phe His Cys His  
1475 1480 1485  
Pro Pro Asp Gln Lys Ile Pro Lys Pro Lys Arg Leu Gln Glu Trp Tyr  
1490 1495 1500  
Lys Lys Met Leu Asp Lys Ala Phe Ala Glu Arg Ile Ile Asn Asp Tyr  
1505 1510 1515 1520  
Lys Asp Ile Phe Lys Gln Ala Asn Glu Asp Arg Leu Thr Ser Ala Lys  
1525 1530 1535  
Glu Leu Pro Tyr Phe Glu Gly Asp Phe Trp Pro Asn Val Leu Glu Glu  
1540 1545 1550  
Ser Ile Lys Glu Leu Glu Gln Glu Glu Glu Arg Lys Lys Glu Glu,  
1555 1560 1565  
Ser Thr Ala Ala Ser Glu Thr Pro Glu Gly Ser Gln Gly Asp Ser Lys  
1570 1575 1580  
Asn Ala Lys Lys Lys Asn Asn Lys Lys Thr Asn Lys Asn Lys Ser Ser  
1585 1590 1595 1600  
Ile Ser Arg Ala Asn Lys Lys Lys Pro Ser Met Pro Asn Val Ser Asn  
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Asp Leu Ser Gln Lys Leu Tyr Ala Thr Met Glu Lys His Lys Glu Val  
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Phe Phe Val Ile His Leu His Ala Gly Pro Val Ile Ser Thr Gln Pro  
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Pro Ile Val Asp Pro Asp Pro Leu Leu Ser Cys Asp Leu Met Asp Gly  
1650 1655 1660  
Arg Asp Ala Phe Leu Thr Leu Ala Arg Asp Lys His Trp Glu Phe Ser  
1665 1670 1675 1680  
Ser Leu Arg Arg Ser Lys Trp Ser Thr Leu Cys Met Leu Val Glu Leu  
1685 1690 1695  
His Thr Gln Gly Gln Asp Arg Phe Val Tyr Thr Cys Asn Glu Cys Lys  
1700 1705 1710  
His His Val Glu Thr Arg Trp His Cys Thr Val Cys Glu Asp Tyr Asp  
1715 1720 1725  
Leu Cys Ile Asn Cys Tyr Asn Thr Lys Ser His Thr His Lys Met Val  
1730 1735 1740  
Lys Trp Gly Leu Gly Leu Asp Asp Glu Gly Ser Ser Gln Gly Glu Pro  
1745 1750 1755 1760  
Gln Ser Lys Ser Pro Gln Glu Ser Arg Arg Leu Ser Ile Gln Arg Cys  
1765 1770 1775  
Ile Gln Ser Leu Val His Ala Cys Gln Cys Arg Asn Ala Asn Cys Ser  
1780 1785 1790  
Leu Pro Ser Cys Gln Lys Met Lys Arg Val Val Gln His Thr Lys Gly  
1795 1800 1805  
Cys Lys Arg Lys Thr Asn Gly Gly Cys Pro Val Cys Lys Gln Leu Ile  
1810 1815 1820  
Ala Leu Cys Cys Tyr His Ala Lys His Cys Gln Glu Asn Lys Cys Pro  
1825 1830 1835 1840  
Val Pro Phe Cys Leu Asn Ile Lys His Asn Val Arg Gln Gln Gln Ile  
1845 1850 1855  
Gln His Cys Leu Gln Gln Ala Gln Leu Met Arg Arg Arg Met Ala Thr  
1860 1865 1870  
Met Asn Thr Arg Asn Val Pro Gln Gln Ser Leu Pro Ser Pro Thr Ser  
1875 1880 1885  
Ala Pro Pro Gly Thr Pro Thr Gln Gln Pro Ser Thr Pro Gln Thr Pro  
1890 1895 1900  
Gln Pro Pro Ala Gln Pro Gln Pro Ser Pro Val Asn Met Ser Pro Ala  
1905 1910 1915 1920  
Gly Phe Pro Asn Val Ala Arg Thr Gln Pro Pro Thr Ile Val Ser Ala  
1925 1930 1935

16  
Gly Lys Pro Thr Asn Gln Val Pro Ala Pro Pro Pro Ala Gln Pro  
1940 1945 1950  
Pro Pro Ala Ala Val Glu Ala Ala Arg Gln Ile Glu Arg Glu Ala Gln  
1955 1960 1965  
Gln Gln Gln His Leu Tyr Arg Ala Asn Ile Asn Asn Gly Met Pro Pro  
1970 1975 1980  
Gly Arg Asp Gly Met Gly Thr Pro Gly Ser Gln Met Thr Pro Val Gly  
1985 1990 1995 2000  
Leu Asn Val Pro Arg Pro Asn Gln Val Ser Gly Pro Val Met Ser Ser  
2005 2010 2015  
Met Pro Pro Gly Gln Trp Gln Gln Ala Pro Ile Pro Gln Gln Gln Pro  
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Gln Pro Gly Met Gln Pro Gln Pro Gly Leu Gln Ser Gln Pro Gly Met  
2115 2120 2125  
Gln Pro Gln Pro Gly Met His Gln Gln Pro Ser Leu Gln Asn Leu Asn  
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2145 2150 2155 2160  
Ala Met Gly Gly Leu Asn Pro Gln Gly Gln Ala Leu Asn Ile Met Asn  
2165 2170 2175  
Pro Gly His Asn Pro Asn Met Thr Asn Met Asn Pro Gln Tyr Arg Glu  
2180 2185 2190  
Met Val Arg Arg Gln Leu Leu Gln His Gln Gln Gln Gln Gln Gln  
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Ala Pro Ala Met Gln Gln Gln Arg Met Gln Gln His Leu Pro Ile Gln  
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Met Gly Gln Pro Gly Leu Gly Ala Asp Ser Thr Pro Asn Ile Gln Gln  
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Ala Leu Gln Gln Arg Ile Leu Gln Gln Gln Gln Met Lys Gln Gln Ile  
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2325 2330 2335  
Ser Leu Ser Asn Gln Val Arg Ser Pro Ala Pro Val Gln Ser Pro Arg  
2340 2345 2350  
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2355 2360 2365  
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2370 2375 2380  
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2385 2390 2395 2400  
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2405 2410 2415



17  
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2435 2440

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17